







Models of Development & Outcome

Atypica

Atypical with intervention





Typica









- The challenges of early diagnosis of ASD
- The delays in translation of scientific knowledge into community practice
- The nature of our current service delivery system

# Diagnosis of Autism

- Behaviorally-based diagnosis
- There are no medical tests or biological markers that indicate the presence of autism



 Diagnostic criteria are specified in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) American Psychiatric Association, 2013



time/age

### **DSM-5 Criteria for ASD**

- Impairments in social communication and social interaction
  - Deficits in social-emotional reciprocity
  - Deficits in nonverbal communication
  - Deficits in developing and maintaining relationships
- Restricted, repetitive patterns of behavior, interests, or activities
  - Stereotyped or repetitive speech, movements, or use of objects
  - Inflexible adherence to routines
  - Highly restricted, fixated interests
  - Unusual sensory interests or reactivity

# Research strategies for identifying the early signs of autism

- Ask parents of children diagnosed with ASD what their children were like as infants and toddlers (*retrospective studies*)
- Mid '90s: review of early home videos
- Early 2000s: Track the development of younger siblings of children with ASD (prospective studies)

### Unique Advantages of Studying Younger Siblings



- Learn about the earliest behavioral markers of ASD (from birth)
- Understand risk for ASD and the components of the "broader phenotype"
- Study developmental course (including regression)
- Investigate potential genetic/biological influences & mechanisms
- Assist families through monitoring & referral

## **DSM-5 Criteria for ASD**

- Impairments in social communication and social interaction (must show all 3)
  - Deficits in social-emotional reciprocity
  - Deficits in nonverbal communication
  - Deficits in developing and maintaining relationships
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# Impairments in social communication and social interaction

- Deficits in social-emotional reciprocity
  - Social approach, back-and-forth conversation (or chatter)
  - Sharing of interests, emotions, or affect
  - Initiating or responding to social interactions
- Deficits in nonverbal communication
- Deficits in developing and maintaining relationships

## Social-Emotional Reciprocity

- Rich, dynamic interactions
- Reciprocal, back-and-forth
   rhythm
- Mutual engagement & enjoyment

#### Impairments in social communication and social interaction

- Deficits in social-emotional reciprocity
- Deficits in nonverbal communication
   Integration of verbal and nonverbal communication
  - Use of eye contact & body language
  - Understanding and use of gestures & facial expressions
- Deficits in developing and maintaining relationships

# Using Nonverbal Forms of Communication

- Gestures
- Eye contact
- Facial expressions
- Vocalizations/Sounds

Integration of communicative behaviors is key

### Impairments in social communication and social interaction

- Deficits in social-emotional reciprocity
- Deficits in nonverbal communication
- Deficits in developing and maintaining relationships
   Adjusting behavior to different social contexts
  - Sharing imaginative play
  - Showing interest in peers
  - Making friends

# Social-communicative behavior is not all-or-nothing

- Social behaviors are not completely absent in autism
- Children with autism <u>do</u> show social behaviors (e.g., eye contact, imitation, attachment)

#### BUT...

- These behaviors occur less consistently across people and settings
- Parents may have to work harder to elicit them
- Subtle <u>qualitative</u> differences may exist (e.g., timing, integration, coordination of behaviors within interactions)

## **DSM-5 Criteria for ASD**

- A. Impairments in social communication and social interaction
  - 1. Deficits in social-emotional reciprocity
  - 2. Deficits in nonverbal communication
  - 3. Deficits in developing and maintaining relationships

## B. Restricted, repetitive patterns of behavior,

- interests, or activities (must show at least 2)
  Stereotyped or repetitive speech, movements, or
- use of objects
- 2. Inflexible adherence to routines
- 3. Highly restricted, fixated interests
- 4. Unusual sensory interests or reactivity

### Characteristics of Typical Play Development

- Play with a variety of toys
- Use toys functionally and flexibly
- Create a variety of different play schemes
- Act out real-life scenarios with toys





# Obstacles to early detection and intervention for children with ASD

- The challenges of early diagnosis of ASD
- The delays in translation of scientific knowledge into community practice
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## Current State of the Science

#### Early detection

# Early intervention • Strong evidence for effectiveness of ASD-

specialized early intervention

Both ABA approaches and

developmental approaches

are effective interventions (and share many features in

common)

- Increased knowledge about early behavioral signs of ASD
  ASD diagnosis can be made by 24 months
- Increased availability of validated ASD screening tools
- Increased awareness of sibling recurrence risk

#### BUT....

Translating research knowledge into community practice

"It takes an estimated average of 17 years for only 14% of new scientific discoveries to enter day-to-day clinical practice"

Westfall, Mold, & Fagnan, 2007

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We Components of SRT Training		
PCPs	El Providers	
Two-hour workshop	One-day STAT workshop	
<ul> <li>Early characteristics of ASD</li> <li>Importance of early detection</li> <li>Local resources</li> <li>Use of the M-CHAT-R/F, Screening checklist. &amp; El</li> </ul>	<ul> <li>Early characteristics of ASD</li> <li>Use of the parent interview, telemedicine consultation, &amp; PCP Feedback form</li> </ul>	
Referral form	<ul> <li>One-day RIT workshop</li> </ul>	
<ul> <li>How to talk to parents</li> </ul>	<ul> <li>Use of RIT &amp; parent coaching</li> </ul>	
<ul> <li>Technical assistance</li> </ul>	Technical assistance	

#### Modified Checklist for Autism in Toddlers – Revised, with Follow-up (M-CHAT-R/F) Robins et al., 2001, 2014

- Level 1 screening tool (for primary care settings)
- Consists of 20 Yes/No items rated by parents
- Developed for children 16-30 months
- Well-researched using large samples
- Has strong psychometric properties when used correctly



 Does your child make <u>unusual</u> finger movements near his or her eyes?

#### STAGE 2: Follow-up interview (for scores from 3 to 7)

 Provider or medical staff asks prescribed questions about items that were endorsed on initial report



M-CHAT-R/F Psychometric Properties (Robins et al., 2014)					
	Sensitivity	Specificity	PPV	NPV	
M-CHAT-R Initial Scoring	.91	.96	.14	.99	
M-CHAT-R w/ Follow-up	.85	.99	.48	.99	

- Use of the follow-up interview is *critical* for reducing false positives!
- The PPV for any type of developmental delay is 0.96



- Level 2 screening tool (for referral settings)
- Consists of 12 interactive items assessing core social-communicative behaviors
- Developed for children 24-35 months; provisional cutoff score for 14-23 months
- Takes 20 minutes to administer
- Strong psychometric properties



### Four Domains Assessed by STAT

- Requesting (2 items)
- Directing Attention (4 items)
- Motor Imitation (4 items)
- Play (2 items)

#### STAT Psychometric Properties (Stone et al., 2004)

Sensitivity	.92
Specificity	.85
Positive Predictive Value	.86
Negative Predictive Value	.92

Test-retest reliability K = .90Interrater agreement K = 1.0Concurrent validity with ADOS K = .95

## Unique Functions of Interactive Screening Tools

- To communicate with parents about observed behaviors
- As teaching tools (to increase awareness about early red flags)
- To identify intervention goals & activities (in social & communication domains)

### Reciprocal Imitation Training (RIT) Ingersoll, 2010, 2012; Ingersoll & Schreibman, 2006

- A play-based, naturalistic intervention with a strong evidence base
- Targets the spontaneous use of imitation within a social context
- Based on ABA principles
- Short-term, low intensity, easy to implement
- Associated with improvements in imitation, joint attention, play, and social interaction
- Can be used by therapists, parents, teachers, paraprofessionals, and siblings









Data collected before and after SRT Intervention (all measures available in English and Spanish)		
From PCPs	<ul> <li>Knowledge/Practices Survey</li> <li>Screening checklist for all 18-month old visits</li> </ul>	
From El Providers	Knowledge/Practices Survey     Child intervention checklist	
From Parents* (different cohorts before and after training)	<ul> <li>Child diagnosis and services received</li> <li>Parenting stress (PSI-SF)</li> <li>Parenting efficacy (MES)</li> <li>Quality of life (WHOQOL-BRF)</li> <li>Service satisfaction (MPOC-20)</li> <li>Child social-communication behavior (PIA-CV)</li> </ul>	
* Parents 36 ma	complete questionnaires every 3 months until child is onths <u>or</u> until child receives diagnostic evaluation	

